

DIGISENS RANGE

## OPTOD Plastic

OPTICAL DISSOLVED OXYGEN  
DIGITAL TECHNOLOGY FOR  
OPTIMIZED MEASURES IN FISH  
FARMING APPLICATION

2 versions  
for more  
adaptation to  
the field



### APPLICATIONS

Sea water monitoring  
Fish Farming: closed  
containment, offshore  
Aquaculture Industry

### ADVANTAGES



- Optical Technology
- Digital Technology (Modbus RS-485)
- No drift, Reduced maintenance
- Body in POM C & PVC

Aqualabo has customers in the aquaculture field for long time as we already produced, 20 years ago, handheld DO meters in our range. However, our presence in this market is more intense since 2012 with more requests from France, Scandinavia, Feroe Islands and Chile.

The reason is that optical DO sensor was becoming popular but prices were still too high for fish farmers, Aqualabo came to this market with more competitive solution.

Other reason is that fish farmers and systems integrators were looking for a sensor that can be integrated directly to PLC to control aeration system. Our full Modbus open protocol was a good way to reduce cost and make direct integration to PLC.

Based on our experience and discussions with our customers and to better support you, we have decided to propose a new sensor for your applications in Aquaculture and Fish Farming at a suitable cost.



## OPTICAL TECHNOLOGY

The OPTOD (Optical Dissolved Oxygen technology) is based on luminescent optical technology. The OPTOD sensor is approved by the ASTM International Method D888-05 & ISO 17289:2014.

Without calibration requirements and thanks to an ultra low power technology, the OPTOD sensor meets the demands of field works and short- or long-term campaigns.

Without oxygen consumption, this technology allows you an accurate measure in all situation and especially in very low oxygen concentrations.

## DIGITAL TECHNOLOGY

The "smart" OPTOD Plastic sensor stores calibration and history data within the sensor. This allows you a "plug and play" system without re-calibration.

Thanks to the Universal Modbus RS485 protocol, the PONSEL OPTOD Plastic can be connected to all devices commonly used (Datalogger, Controller, Automat, Remote System...).

## MECHANIC

Compact, strong and light, the sensor allows a portable or in fixed/permanent use.

Body in POM C and PVC with 2 versions of strainers to adapt according to the application.

Internal reinforcement for more robustness.

## PONSEL OPTOD PLASTIC SPECIFICATIONS

Measures	
Measure principle	Optical measure by luminescence
Measure ranges	0,00 to 20,00 mg/L 0,00 to 20,00 ppm 0-200%
Resolution	0,01
Accuracy	+/- 0,1 mg/L, +/- 0,1 ppm, +/- 1 % (+/-5% if EMI Perturbations are more than 10V/m) The sensor must be fully immersed to ensure maximum accuracy
Limit of detection	0.7 %
Limit of quantification	2.2 %
Repeatability (100% Sat)	0.2 %
Linearity	>0.99
Response time	0-> 100 % ; T90 < 40s 100 -> 0% ; T90 < 65 s
Frequency of recommended measure	>5s
Water Flow	No movement required for measurement
Temperature compensation	Via NTC
Temperature	0.00-50.00 °C Accuracy: +/- 0.5 °C
Stocking temperature	- 10°C to + 60°C
Temperature range	0°C to 50°C
Temperature accuracy	+ /- 0,5°C

## Communication Power supply

### Signal interface

Modbus<sup>1</sup> RS-485 or SDI-12<sup>2,3</sup>

1,2. The sensor responds in Modbus / SDI12 including during Standby

3. The use and connexion of SDI12 bus may increase the standby power

Consumption\* up to 100uA depending the level of the line (high or low). The consumption is not increased if the SDI12 line is disconnected or released to 0V (Modbus RTU only)

### Sensor power-supply (RS485 and SDI12)

5 V<sup>1,2</sup> to 12 V<sup>3,4</sup> DC (warm-up time 100 ms)

1. Absolute minimum 4.5V with 1m of cable, boot and precision not guaranteed under 5V

2. Minimum voltage subjected to cable length-related losses

3. 13V Absolute maximum with a more than 2 mA continuous over consumption

4. Small overconsumption between 12V and 12.5V

### Consumption

Standby 25 µA

Average RS485 (1 meas/s): 3.2 mA

Average SDI12 (1 meas/s): 6 mA

Current pulse: 85 mA (3 ms)

*For more details, refer to the user manual*

## Sensor

### Dimensions

Standard version: Diameter: 27mm; length: 143mm

More protective strainer: Diameter: 27 mm; Length: 166 mm

### Weight

300 g (sensor + cable 3 m)

### Material

Black POM C, PVC

### Maximum pressure

5 bars

### Connection

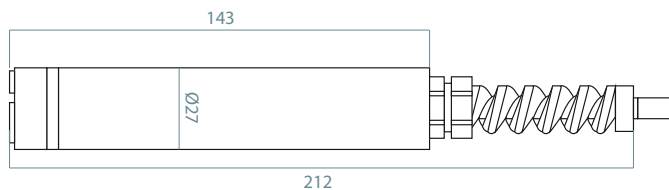
9 armoured connectors, polyurethane jacket, bare-wires

### Ingress Protection rating

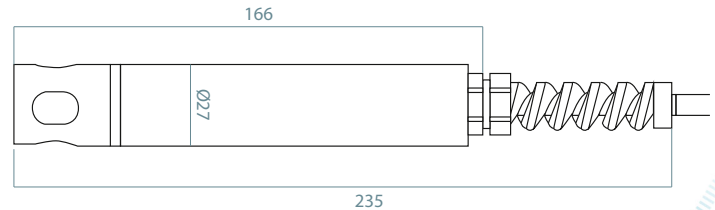
IP68

## DIMENSIONS

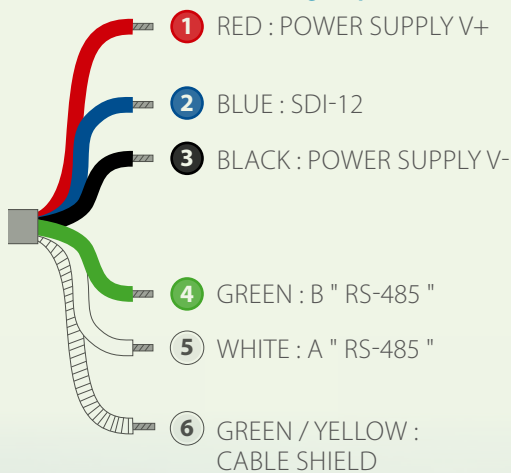
### Standard strainer



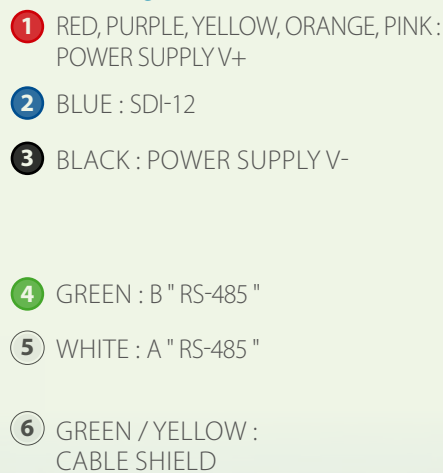
### More protective strainer



### Cable length up to 15m



### Cable length 15 to 100 meters



### Notes:

- Ever exceed a voltage of 10VDC (absolute maximum), on the communication lines RS485, A or B, under penalty of irreversible destruction of the transceiver component RS 485.
- SDI-12: comply with the voltage value described in the associated standard (nominal: 5VDC)
- Always connect the ground + shielding correctly first.
- Always connect the ground + shielding to both power supply and master Modbus ground.